E/ECE/324
E/ECE/TRANS/505 } Rev.1/Add.30/Rev.1/Amend.1

16 April 1997

# AGREEMENT

## CONCERNING THE ADOPTION OF UNIFORM TECHNICAL PRESCRIPTIONS FOR WHEELED VEHICLES, EQUIPMENT AND PARTS WHICH CAN BE FITTED AND/OR BE USED ON WHEELED VEHICLES AND THE CONDITIONS FOR RECIPROCAL RECOGNITION OF APPROVALS GRANTED ON THE BASIS OF THESE PRESCRIPTIONS */

(Revision 2, including the amendments entered into force on 16 October 1995)

---

*Addendum 30: Regulation No. 31*

***Revision 1 - Amendment 1***

**Supplement 3 to the 02 series of amendments - Date of entry into force: 23 January 1997**

**UNIFORM PROVISIONS CONCERNING THE APPROVAL OF HALOGEN SEALED-BEAM UNIT (HSB UNIT) MOTOR VEHICLE HEADLAMPS EMITTING AN ASYMMETRICAL PASSING BEAM OR A DRIVING BEAM OR BOTH**

---

**UNITED NATIONS**

---

*/ Former title of the Agreement:

Agreement Concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958.

GE.97-21148

Under Contents, "Annexes", amend the titles to read:

"Annex 1 - Communication concerning the approval or extension or .....

Annex 2 - Examples of arrangements of approval marks

Annex 3 - Electrical connections of HSB units

Annex 4 - Measuring screen

Annex 5 - Minimum requirements for conformity of production control procedures

Annex 6 - Test for stability of photometric performance of headlamps in operation

Annex 7 - Requirements for lamps incorporating lenses of plastic material .....

Annex 8 - Minimum requirements for sampling by an inspector"

Paragraph 5.2.1.1., footnote 3/, amend to read:

"3/ 1 for Germany, ... 8 for the Czech Republic, ... 23 for Greece, 24 (vacant), 25 for Croatia, 26 for Slovenia, 27 for Slovakia, 28 for Belarus, 29 for Estonia, 30-36 (vacant) and 37 for Turkey. Subsequent numbers ...."

Paragraph 11, replace by the following text:

"11. CONFORMITY OF PRODUCTION

11.1. Headlamps approved under this Regulation shall be so manufactured as to conform to the type approved by meeting the requirements set forth in paragraphs 8 and 9.

11.2. In order to verify that the requirements of paragraph 11.1. are met, suitable controls of the production shall be carried out.

11.3. The holder of the approval shall in particular:

11.3.1. ensure the existence of procedures for the effective control of the quality of products;

11.3.2. have access to the control equipment necessary for checking the conformity to each approved type;

11.3.3. ensure that data of test results are recorded and that related documents shall remain available for a period to be determined in accordance with the administrative service;

11.3.4. analyze the results of each type of test in order to verify and ensure the stability of the product characteristics, making allowance for variation of an industrial production;

11.3.5. ensure that for each type of product at least the tests prescribed in annex 5 to this Regulation are carried out;

11.3.6. ensure that any collecting of samples giving evidence of non-conformity with the type of test considered shall give rise to another sampling and another test. All the necessary steps shall be taken to re-establish the conformity of the corresponding production.

11.4. The competent authority which has granted type approval may at any time verify the conformity control methods applicable to each production unit.

11.4.1. In every inspection, the test books and production survey records shall be presented to the visiting inspector.

11.4.2. The inspector may take samples at random to be tested in the manufacturer's laboratory. The minimum number of samples may be determined in the light of the results of the manufacturer's own checks.

11.4.3. When the quality level appears unsatisfactory or when it seems necessary to verify the validity of the tests carried out in the application of paragraph 11.4.2. above, the inspector shall select samples, to be sent to the technical service which has conducted the type approval tests, using the criteria of annex 8.

11.4.4. The competent authority may carry out any test prescribed in this Regulation. These tests will be on samples selected at random without causing distortion of the manufacturer's delivery commitments and in accordance with the criteria of annex 8.

11.4.5. The competent authority shall strive to obtain a frequency of inspection of once every two years, However, this is at the discretion of the competent authority and their confidence in the arrangements for ensuring effective control of the conformity of production. In the case where negative results are recorded, the competent authority shall ensure that all necessary steps are taken to re-establish the conformity of production as rapidly as possible.

11.5. Headlamps with apparent defects are disregarded.

11.6. The reference mark is disregarded."

Annex 5, replace by the following text:

"Annex 5

MINIMUM REQUIREMENTS FOR CONFORMITY OF PRODUCTION CONTROL PROCEDURES

1. GENERAL

1.1. The conformity requirements shall be considered satisfied from a mechanical and geometric standpoint, if the differences do not exceed inevitable manufacturing deviations within the requirements of this Regulation.

1.2. With respect to photometric performances, the conformity of mass-produced headlamps shall not be contested if, when testing photometric performances of any headlamp chosen at random:

1.2.1. no measured value deviates unfavourably by more than 20 per cent from the values prescribed in this Regulation. For values B 50 L (or R) and zone III, the maximum unfavourable deviation may be respectively:

| | | |
|---|---|---|
| B 50 L (or R) : | 0.2 lx | equivalent 20 per cent |
| | 0.3 lx | equivalent 30 per cent |
| Zone III: | 0.3 lx | equivalent 20 per cent |
| | 0.45 lx | equivalent 30 per cent |

1.2.2. or if

1.2.2.1. for the passing beam, the values prescribed in this Regulation are met at HV (with a tolerance of + 0.2 lx) and related to that aiming at least one point of each area delimited on the measuring screen (at 25 m) by a circle 15 cm in radius around points B 50 L (or R) 1/ (with a tolerance of + 0.1 lx), 75 R (or L), 50 V, 25 R, 25 L, and in the entire area of zone IV which is not more than 22.5 cm above line 25 R and 25 L;

1.2.2.2. and if, for the driving beam, HV being situated within the isolux 0.75 $E_{max}$, a tolerance of + 20 per cent for maximum values and - 20 per cent for minimum values is observed for the photometric values at any measuring point specified in paragraph 8.3. of this Regulation.

1.2.3. If the results of the tests described above do not meet the requirements, the alignment of the headlamp may be changed, provided that the axis of the beam is not displaced laterally by more than 1° to the right or left. 10/

---

1/ Letters in brackets refer to headlamps intended for left-hand traffic.

10/ See the corresponding footnote in the text of the Regulation.

1.3. With respect to the verification of the change in vertical position of the cut-off line under the influence of heat, the following procedure shall be applied:

One of the sampled headlamps shall be tested according to the procedure described in paragraph 2.1. of annex 6 after being subjected three consecutive times to the cycle described in paragraph 2.2.2. of annex 6.

The headlamp shall be considered as acceptable if $\Delta r$ does not exceed 1.5 mrad.

If this value exceeds 1.5 mrad but is not more than 2.0 mrad, a second headlamp shall be subjected to the test after which the mean of the absolute values recorded on both samples shall not exceed 1.5 mrad.

1.4. The chromaticity coordinates shall be complied with.

The photometric performance of a headlamp emitting selective yellow light shall be the values contained in this Regulation multiplied by 0.84.

2. MINIMUM REQUIREMENTS FOR VERIFICATION OF CONFORMITY BY THE MANUFACTURER

For each type of headlamp the holder of the approval mark shall carry out at least the following tests, at appropriate intervals. The tests shall be carried out in accordance with the provisions of this Regulation.

If any sampling shows non-conformity with regard to the type of test concerned, further samples shall be taken and tested. The manufacturer shall take steps to ensure the conformity of the production concerned.

2.1. Nature of tests

Tests of conformity in this Regulation shall cover the photometric characteristics and the verification of the change in vertical position of the cut-off line under the influence of heat.

2.2. Methods used in tests

2.2.1. Tests shall generally be carried out in accordance with the methods set out in this Regulation.

2.2.2. In any test of conformity carried out by the manufacturer, equivalent methods may be used with the consent of the competent authority responsible for approval tests. The manufacturer is responsible for proving that the applied methods are equivalent to those laid down in this Regulation.

2.2.3. The application of paragraphs 2.2.1. and 2.2.2. requires regular calibration of test apparatus and its correlation with measurements made by a competent authority.

2.2.4. In all cases the reference methods shall be those of this Regulation, particularly for the purpose of administrative verification and sampling.

2.3. Nature of sampling

Samples of headlamps shall be selected at random from the production of a uniform batch. A uniform batch means a set of headlamps of the same type, defined according to the production methods of the manufacturer.

The assessment shall in general cover series production from individual factories. However, a manufacturer may group together records concerning the same type from several factories, provided these operate under the same quality system and quality management.

2.4. Measured and recorded photometric characteristics

The sampled headlamp shall be subjected to photometric measurements at the points provided for in the Regulation, the reading being limited to points $E_{max}$, HV 1/, HL, HR 2/ in the case of the driving beam, and to points B 50 L (or R), HV, 50 V, 75 R (or L) and 25 L (or R) in the case of the passing beam (see figure in annex 4).

2.5. Criteria governing acceptability

The manufacturer is responsible for carrying out a statistical study of the test results and for defining, in agreement with the competent authority, criteria governing the acceptability of his products in order to meet the specifications laid down for verification of conformity of products in paragraph 11.1. of this Regulation.

The criteria governing the acceptability shall be such that, with a confidence level of 95 per cent, the minimum probability of passing a spot check in accordance with annex 8 (first sampling) would be 0.95."

---

1/ When the driving beam is reciprocally incorporated with the passing beam, HV in the case of the driving beam shall be the same measuring point as in the case of the passing beam.

2/ HL and HR: points on "hh" located at 1.125 m to the left and to the right of point HV respectively.

Annex 6, paragraph 3, should be deleted.

Add a new Annex 8, to read:

"Annex 8

MINIMUM REQUIREMENTS FOR SAMPLING BY AN INSPECTOR

1. GENERAL

1.1. The conformity requirements shall be considered satisfied from a mechanical and a geometric standpoint, in accordance with the requirements of this Regulation, if any, if the differences do not exceed inevitable manufacturing deviations.

1.2. With respect to photometric performance, the conformity of mass-produced headlamps shall not be contested if, when testing photometric performances of any headlamp chosen at random;

1.2.1. no measured value deviates unfavourably by more than 20 per cent from the values prescribed in this Regulation.
For values B 50 L (or R) and Zone III the maximum deviation may be respectively:

| | | |
|---|---|---|
| B 50 L (or R) : | 0.2 lx | equivalent 20 per cent |
| | 0.3 lx | equivalent 30 per cent |
| Zone III: | 0.3 lx | equivalent 20 per cent |
| | 0.45 lx | equivalent 30 per cent |

1.2.2. or if

1.2.2.1. for the passing beam, the values prescribed in this Regulation are met at HV (with a tolerance of 0.2 lx) and related to that aiming at least one point of each area delimited on the measuring screen (at 25 m) by a circle 15 cm in radius around points B 50 L (or R) 1/ (with a tolerance of 0.1 lx), 75 R (or L), 50 V, 25 R, 25 L, and in the entire area of zone IV which is not more than 22.5 cm above line 25 R and 25 L;

1.2.2.2. and if, for the driving beam, HV being situated within the isolux 0.75 $E_{max}$, a tolerance of + 20 per cent for maximum values and - 20 per cent for minimum values is observed for the photometric values at any measuring point specified in paragraph 8.3. of this Regulation. The reference mark is disregarded.

---

1/ Letters in brackets refer to headlamps intended for left-hand traffic.

1.2.3. If the results of the tests described above do not meet the requirements, the alignment of the headlamp may be changed, provided that the axis of the beam is not displaced laterally by more than 1° to the right or left. 10/

1.2.4. Headlamps with apparent defects are disregarded.

1.2.5. The reference mark is disregarded.

1.3. The chromaticity coordinates shall be complied with.

The photometric performance of a headlamp emitting selective yellow light shall be the values contained in this Regulation multiplied by 0.84.

2. FIRST SAMPLING

In the first sampling four headlamps are selected at random. The first sample of two is marked A, the second sample of two is marked B.

2.1. The conformity is not contested

2.1.1. Following the sampling procedure shown in Figure 1 of this annex the conformity of mass-produced headlamps shall not be contested if the deviation of the measured values of the headlamps in the unfavourable directions are:

2.1.1.1. sample A

| | | |
|---|---|---|
| A1: | one headlamp | 0 per cent |
| | one headlamp not more than | 20 per cent |
| A2: | both headlamps more than | 0 per cent |
| | but not more than | 20 per cent |
| | go to sample B | |

2.1.1.2. sample B

| | | |
|---|---|---|
| B1: | both headlamps | 0 per cent |

2.1.2. or if the conditions of paragraph 1.2.2. for sample A are fulfilled.

---

10/ See the corresponding footnote in the text of the Regulation.

2.2. The conformity is contested

2.2.1. Following the sampling procedure shown in Figure 1 of this annex the conformity of mass-produced headlamps shall be contested and the manufacturer requested to make his production meet the requirements (alignment) if the deviations of the measured values of the headlamps are:

2.2.1.1. sample A

| | | | |
|---|---|---|---|
| A3: | one headlamp | not more than | 20 per cent |
| | one headlamp | more than | 20 per cent |
| | but | not more than | 30 per cent |

2.2.1.2. sample B

| | | | |
|---|---|---|---|
| B2: | in the case of A2 | | |
| | one headlamp | more than | 0 per cent |
| | but | not more than | 20 per cent |
| | one headlamp | not more than | 20 per cent |

| | | | |
|---|---|---|---|
| B3: | in the case of A2 | | |
| | one headlamp | | 0 per cent |
| | one headlamp | more than | 20 per cent |
| | but | not more than | 30 per cent |

2.2.2. or if the conditions of paragraph 1.2.2. for sample A are not fulfilled.

2.3. Approval withdrawn

Conformity shall be contested and paragraph 12 applied if, following the sampling procedure in Figure 1 of this annex, the deviations of the measured values of the headlamps are:

2.3.1. sample A

| | | | |
|---|---|---|---|
| A4: | one headlamp | not more than | 20 per cent |
| | one headlamp | more than | 30 per cent |

| | | | |
|---|---|---|---|
| A5: | both headlamps | more than | 20 per cent |

2.3.2. sample B

| | | | |
|---|---|---|---|
| B4: | in the case of A2 | | |
| | one headlamp | more than | 0 per cent |
| | but | not more than | 20 per cent |
| | one headlamp | more than | 20 per cent |

| | | | |
|---|---|---|---|
| B5: | in the case of A2 | | |
| | both headlamps | more than | 20 per cent |

B6: in the case of A2
one headlamp 0 per cent
one headlamp more than 30 per cent

2.3.3. or if the conditions of paragraph 1.2.2. for samples A and B are not fulfilled.

3. REPEATED SAMPLING

In the cases of A3, B2, B3 a repeated sampling, third sample C of two headlamps and fourth sample D of two headlamps, selected from stock manufactured after alignment, is necessary within two months time after the notification.

3.1. The conformity is not contested

3.1.1. Following the sampling procedure shown in Figure 1 of this annex the conformity of mass-produced headlamps shall not be contested if the deviations of the measured values of the headlamps are:

3.1.1.1. sample C

C1: one headlamp 0 per cent
one headlamp not more than 20 per cent

C2: both headlamps more than 0 per cent
but not more than 20 per cent
go to sample D

3.1.1.2. sample D

D1: in the case of C2
both headlamps 0 per cent

3.1.2. or if the conditions of paragraph 1.2.2. for sample C are fulfilled.

3.2. The conformity is contested

3.2.1. Following the sampling procedure shown in Figure 1 of this annex the conformity of mass-produced headlamps shall be contested and the manufacturer requested to make his production meet the requirements (alignment) if the deviations of the measured values of the headlamps are:

3.2.1.1. sample D

D2: in the case of C2
one headlamp more than 0 per cent
but not more than 20 per cent
one headlamp not more than 20 per cent

3.2.1.2. or if the conditions of paragraph 1.2.2. for sample C are not fulfilled:

3.3. Approval withdrawn

Conformity shall be contested and paragraph 12 applied if, following the sampling procedure in Figure 1 of this annex, the deviations of the measured values of the headlamps are:

3.3.1. sample C

C3: one headlamp not more than 20 per cent
one headlamp more than 20 per cent
C4: both headlamps more than 20 per cent

3.3.2. sample D

D3: in the case of C2
one headlamp 0 or more than 0 per cent
one headlamp more than 20 per cent

3.3.3. or if the conditions of paragraph 1.2.2. for samples C and D are not fulfilled.

4. CHANGE OF THE VERTICAL POSITION OF THE CUT-OFF LINE

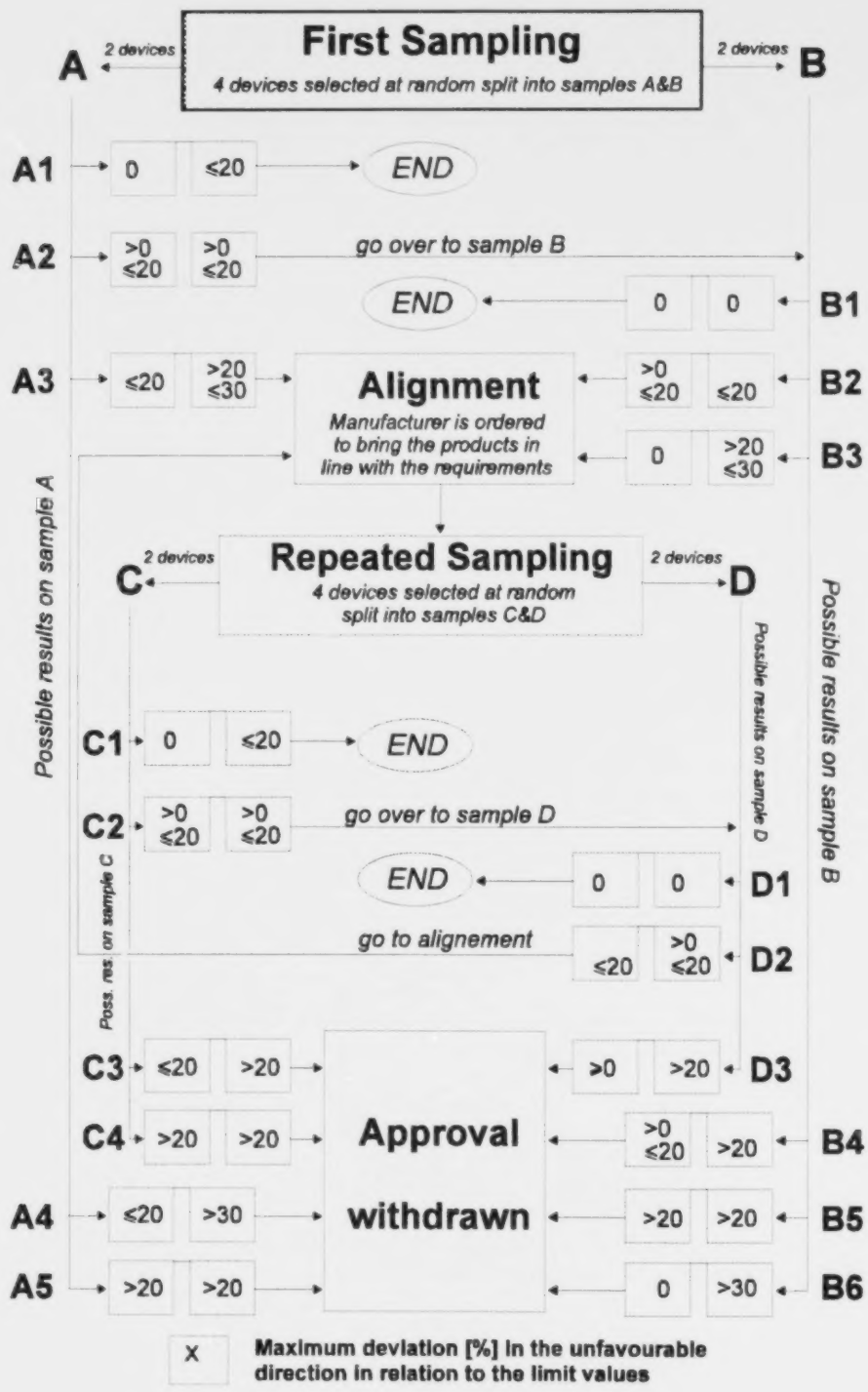
With respect to the verification of the change in vertical positions of the cut-off line under the influence of heat, the following procedure shall be applied:

One of the headlamps of sample A after sampling procedure in Figure 1 of this annex shall be tested according to the procedure described in paragraph 2.1. of annex 6 after being subjected three consecutive times to the cycle described in paragraph 2.2.2. of annex 6.

The headlamp shall be considered as acceptable if $\Delta r$ does not exceed 1.5 mrad.

If this value exceeds 1.5 mrad but is not more than 2.0 mrad, the second headlamp of sample A shall be subjected to the test after which the mean of the absolute values recorded in both samples shall not exceed 1.5 mrad.
However, if this value of 1.5 mrad on sample A is not complied with, the two headlamps of sample B shall be subjected to the same procedure and the value of $\Delta r$ for each of them shall not exceed 1.5 mrad."

Figure 1


First Sampling
4 devices selected at random split into samples A&B
A
2 devices
B
2 devices
A1
0
≤20
END
A2
>0 ≤20
>0 ≤20
go over to sample B
END
0
0
B1
A3
≤20
>20 ≤30
Alignment
Manufacturer is ordered to bring the products in line with the requirements
>0 ≤20
≤20
B2
0
>20 ≤30
B3
Possible results on sample A
C
2 devices
Repeated Sampling
4 devices selected at random split into samples C&D
2 devices
D
Possible results on sample B
Possible results on sample D
C1
0
≤20
END
C2
>0 ≤20
>0 ≤20
go over to sample D
END
0
0
D1
Poss. res. on sample C
go to alignement
≤20
>0 ≤20
D2
C3
≤20
>20
>0
>20
D3
C4
>20
>20
Approval
>0 ≤20
>20
B4
A4
≤20
>30
withdrawn
>20
>20
B5
A5
>20
>20
0
>30
B6
X
Maximum deviation [%] in the unfavourable direction in relation to the limit values